

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

William Y. Conwell

Application No.: **09/888,339**

Filed: June 21, 2001

Art Unit: 2135

Confirmation No.: 7232

**Via Electronic Filing**

For: CONTENT IDENTIFIERS  
TRIGGERING CORRESPONDING  
RESPONSES THROUGH  
COLLABORATIVE PROCESSING

Examiner: H. Song

Date: July 14, 2006

**APPEAL BRIEF**

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Sir:

Appellants respectfully request the Board of Patent Appeals and Interferences (hereafter referred to as “the Board”) to reverse the outstanding final rejection of the pending claims.

This Appeal Brief is in furtherance of a Notice of Appeal filed April 19, 2006. Please charge the fee required under 37 CFR 1.17(f) or any other fee to deposit account 50-1071.

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**REAL PARTY IN INTEREST**

The real party in interest is Digimarc Corporation, by an assignment from the inventors recorded at Reel 012240, Frames 0906-0907, on October 5, 2001.

**RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences.

**STATUS OF CLAIMS**

Claims 1-23 are pending in the present application<sup>1</sup>.

Claims 11, 16-18 and 22 are allowed.

Claims 1-10, 12-15, 19-21 and 23 stand finally rejected. Please see the final Office Action mailed October 19, 2006.

**STATUS OF AMENDMENTS**

All previous amendments have been entered.

**SUMMARY OF CLAIMED SUBJECT MATTER**

The invention generally relates to so-called “fingerprinting” (e.g., robust hashing). Fingerprinting may involve generating or deriving an identifier from attributes of content itself (e.g., from audio or video). See, e.g., page 2, paragraph [0009].

For example, fingerprint technology may analyze a song’s beat or tempo to determine an identifier. See, e.g., page 2, paragraph [0010]. Other fingerprinting technologies may represent content through the significant features of the content (see, page 2, paragraph [0011]), identify content through hashing (see, e.g., page 3, paragraph [0017]) or employing neural networks (see,

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<sup>1</sup> The Office Action Summary, accompanying the final Office Action mailed on October 19, 2005, states that claim 1-22 are pending. But the body of the final Office Action address claim 23 (see page 3, under the “Claim 23” heading).

e.g., page 3, paragraph [0015]). Many other fingerprinting techniques are disclosed in the specification.

A fingerprint identifier can, e.g., then be forwarded to a database (or other data structure) to determine the song (or other audio track) to which it corresponds. See, e.g., page 2, paragraph [0009].

Some of the claims also involve so-called “digital watermarking.” Digital watermarking hides auxiliary information in a host signal (e.g., audio or video signal). The very presence of the auxiliary information is generally imperceptible to a human viewer or listener of the host signal. See, e.g., page 7 paragraph [0034] including assignee’s U.S. Patent Application No. 09/503,881 (now U.S. Patent No. 6,614,914) which is incorporated by reference; and please see page 13, paragraph [0055].

Claim 1 recites a method comprising: aggregating first fingerprint data and second fingerprint data (see, e.g., page 9, paragraphs [0040] – [0042]), wherein fingerprint data comprises at least a reduced-bit representation of content (see, e.g., page 2, paragraph [0009]), and wherein the first fingerprint data originated at a first source and the second fingerprint data originated at second source (see, e.g., pages 9-10, paragraphs [0042] - [0043]), and wherein the first source and the second source are remotely located (see, e.g., page 9, paragraph [0040]); identifying information associated with the first fingerprint data and the second fingerprint data (see, e.g., page 10, paragraph [0043]); and determining a subset of the associated information (see, e.g., pages 10-11, paragraphs [0044] - [0045]).

Claim 3 recites the method according to claim 1, wherein said determining is based at least in part on a frequency occurrence of the subset, and wherein the subset comprises at least one of audio, video, and image data (see, e.g., pages 10-11, paragraphs [0044] - [0045]).

Claim 6 recites the method according to claim 1, wherein the first fingerprint data comprises a first set of audio fingerprints (see, e.g., pages 9-10, paragraphs [0040] and [0043]), and wherein the second fingerprint data comprises a second set of audio fingerprints (see, e.g., pages 9-10, paragraphs [0040] and [0043]).

Claim 9 recites a method comprising: receiving a signal from a first broadcast source at a

reference receiver (see, e.g., page 11, paragraph [0048]); generating first fingerprint data from the received signal (see, e.g., page 11, paragraph [0048]); applying the first fingerprint data to a database to select associated information (see, e.g., page 11, paragraph [0049]); receiving second fingerprint data (see, e.g., pages 11-12, paragraph [0050]); and comparing the second fingerprint data with the associated information (see, e.g., pages 11-12, paragraph [0050]).

Claim 19 recites the method according to claim 9, wherein when a comparison of the second fingerprint data with the associated information does not identify a subset of the associated data, the method further comprises querying a second database to determine additional associated information (see, e.g., pages 11-12, paragraph [0050]).

Claim 12 recites a method comprising: receiving a signal from a first broadcast source at a reference receiver (see, e.g., page 11, paragraph [0048]); generating first fingerprint data from the received signal (see, e.g., page 11, paragraph [0048]); applying the first fingerprint data to a database to select associated information (see, e.g., page 11, paragraph [0049]); receiving second fingerprint data (see, e.g., pages 11-12, paragraph [0050]); and comparing the second fingerprint data with the associated information, wherein a user device generates the second fingerprint data (see, e.g., pages 11-12, paragraphs [0050] - [0051]).

Claim 20 recites a method comprising: receiving a signal from a first broadcast source at a reference receiver, the signal comprising an embedded digital watermark (see, e.g., pages 12-13, paragraph [0053]); decoding the digital watermark to obtain a plural-bit identifier (see, e.g., pages 12-13, paragraph [0053]; see also page 7, paragraph [0034]); interrogating a database with the identifier to identify a set of fingerprints associated with the received signal (see, e.g., pages 12-13, paragraph [0053]); receiving second fingerprint data; and comparing the second fingerprint data with the set of fingerprints (see, e.g., pages 12-13, paragraph [0053]).

Claim 23 recites a method comprising: receiving content, wherein the content comprises an embedded digital watermark (see, e.g., pages 12-13, paragraph [0053]); decoding the digital watermark to obtain a plural-bit identifier (see, e.g., pages 12-13, paragraph [0053]; see also page 7, paragraph [0034]); deriving a reduced-bit representation of the content (see, e.g., pages 12-13, paragraph [0053]); accessing a database with at least the plural-bit identifier; and using at least

the reduced-bit representation of the content to help identify or authenticate the content (see, e.g., pages 12-13, paragraph [0053]).

Claim 2 recites the method according to claim 1, wherein said determining is based at least in part on a frequency occurrence of the subset, and wherein the frequency occurrence comprises a vote tally (see, e.g., pages 10-11, paragraphs [0044] - [0045]).

Claim 5 recites the method of claim 1, wherein said aggregating comprises aggregating fingerprint data within a predetermined time period (see, e.g., page 9, paragraph [0042]).

Claim 7 recites a method to match a song based on an audio fingerprint, said method comprising: aggregating a first set of audio fingerprints provided by a first device with a second set of audio fingerprints provided by a remotely located second device (see, e.g., page 9, paragraphs [0040] – [0042]); determining a plurality of songs relating to the aggregated fingerprints (see, e.g., page 10, paragraph [0043]); and selecting a song from the plurality of songs based on a number of times a selected song matches the aggregated fingerprints (see, e.g., pages 10-11, paragraphs [0044] – [0045]).

Claim 14 recites a method comprising: receiving a signal from a first broadcast source at a reference receiver (see, e.g., page 11, paragraph [0048]); generating first fingerprint data from the received signal (see, e.g., page 11, paragraph [0048]); applying the first fingerprint data to a database to select associated information (see, e.g., page 11, paragraph [0049]); receiving second fingerprint data, wherein a user device generates the second fingerprint data (see, e.g., pages 11-12, paragraphs [0050]-[0051]); comparing the second fingerprint data with the associated information (see, e.g., pages 11-12, paragraphs [0050] - [0051]); and determining a geographical location of the user device (see, e.g., page 12, paragraph [0051]).

Claim 13 recites a method comprising: receiving a signal from a first broadcast source at a reference receiver (see, e.g., page 11, paragraph [0048]); generating first fingerprint data from the received signal (see, e.g., page 11, paragraph [0048]); applying the first fingerprint data to a database to select associated information; receiving second fingerprint data (see, e.g., page 11, paragraph [0049]), wherein a cell phone generates the second fingerprint data (see, e.g., page 12,

paragraph [0051]); and comparing the second fingerprint data with the associated information (see, e.g., pages 11-12, paragraphs [0050] - [0051]).

### **GROUND OF REJECTION TO BE REVIEWED ON APPEAL**

1. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,148,407 (hereafter referred to as “the Aucsmith patent”) in view of U.S. Patent No. 6,226,672 (hereafter referred to as “the DeMartin patent”).
2. Claims 1, 3, 4, 6, 9, 12, 19, 20 and 23 stand finally rejected under 35 U.S.C. 102(e) as being anticipated by the Aucsmith patent.
3. Claims 2, 5, 10 and 21 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over the Aucsmith patent.
4. Claims 13-15 stand finally rejected under 35 U.S.C. 103(a) as being unpatentable over the Aucsmith patent in view of U.S. Patent No. 6,219,793 (hereafter referred to as “the Li patent”).

### **ARGUMENT**

Appellants respectfully request that the final rejection of the subject claims be reversed since the applied references fail to teach or suggest all of the elements of the pending claims.



***Rejections under U.S.C. 103(a) over the Aucsmith Patent in view of the DeMartin Patent***

Claims 7 and 8

Claim 7 recites:

*7. A method to match a song based on an audio fingerprint, said method comprising:  
aggregating a first set of audio fingerprints provided by a first device with a second set of audio fingerprints provided by a remotely located second device;  
determining a plurality of songs relating to the aggregated fingerprints; and  
selecting a song from the plurality of songs based on a number of times a selected song matches the aggregated fingerprints.*

The final rejection of claim 7 should be reversed.

Claim 7 recites selecting a song from the plurality of songs based on a number of times a selected song matches the aggregated fingerprints, in combination with other features.

One example falling within the scope of this claim is seen in the specification at paragraphs 40-45. (Of course there are other examples and implementations that will fall within the scope of claim 7 and limitations from the specification should not be read into the claim.) These specification passages are reproduced below for the convenience of the Board.

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**[0040]** In some situations, content may be processed by plural users, at about the same time, to generate corresponding identifiers. This may occur, for example, where the content is a song or advertisement broadcast over the radio. Many listeners in a metropolitan area may process audio from the same song broadcast over the radio, e.g., to learn the artist or song title, to engage in some related e-commerce activity, or for another purpose (such as the other purposes identified in the cited applications).

**[0041]** In such cases it may be desirable to employ collaboration between such users, e.g., to assure more accurate results, to reduce the processing burden, etc.

**[0042]** In one embodiment, each user generates several different fingerprints from the content (such as those identified in the table, above). These fingerprints may be aggregated with other fingerprints submitted from other users within a given time window (e.g., within the past twenty seconds, or within the past fifteen and next five seconds). Since more data is being considered, the “correct” match may more likely stand out from spurious, incorrect matches.

**[0043]** Consider Users 1 and 2, whose content yields fingerprints giving the following matches (User 1 is unchanged from the earlier example):

Fingerprinted excerpt	Matches these songs in database
User 1, Fingerprint N	A, B, C
User 1, Fingerprint N+1	C, D, E
User 1, Fingerprint N+2	B, D, F
User 1, Fingerprint N+3	B, F, G
User 2, Fingerprint M	A, B, E
User 2, Fingerprint M+1	H, I, A
User 2, Fingerprint M+2	X, Y, Z

**[0044]** Aggregating the fingerprints from the two users results in an enhanced vote tally in which song B is the evident correct choice – with a higher probability of certainty than in the example earlier given involving a single user:

Matches to	A	B	C	D	E	F	G	H	I	X	Y	Z
# Hits	2	4	2	2	2	2	1	1	1	1	1	1

**[0045]** Moreover, note that User 2's results are wholly ambiguous – no song received more than a single candidate match. Only when augmented by consideration of fingerprints from User 1 can a determination for User 2 be made. This collaboration aids the situation where several users are listening to the same content. If two users are listening to different content, it is highly probable that the fingerprints of the two users will be uncorrelated. No benefit arises in this situation, but the collaboration does not work an impairment, either. (In identifying the song for User 1, the system would only check the candidates for whom User 1 voted. Thus, if the above table showed 5 votes for a song J, that large vote count would not be considered in identifying the song for User 1, since none of the fingerprints from User 1 corresponded to that song.)

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Claim 7 is now mapped to the above example by way of non-limiting illustration: aggregating a first set of audio fingerprints (N, N+1, N+2, and N+3) provided by a first device (User 1 device) with a second set of audio fingerprints (M, M+1, and M+2) provided by a remotely located second device (User 2 device); determining a plurality of songs (A, B, C, D, E, F, G, H, I, X, Y, Z) relating to the aggregated fingerprints (N, N+1, N+2, N+3, M, M+1, and M+2); and selecting a song (e.g., Song B) from the plurality of songs based on a number of times (e.g., 4 hits) a selected song matches the aggregated fingerprints.

The Office Action acknowledges that the Aucsmith patent is deficient and cites the DeMartin patent at Col. 4, lines 49-62 as meeting the feature of: “*selecting a song from the plurality of songs based on a number of times a selected song matches the aggregated fingerprints*”. See the final Office Action at page 4, paragraph 3.

But the cited passage in the DeMartin patent merely discusses that a Table of Contents (TOC) of a disk is used to find a matching title and name of a track stored in a database associated with a Music Web server.

And there is no consideration in the cited DeMartin passage of a number of times that a selected track matches a particular TOC, as one might suppose if this passage were to teach some of the features of claim 7. Instead, the DeMartin passage is focused on finding a particular title

(“Using the database, the TOC data from each CD is matched against its title and the name of each track on that CD.” See the DeMartin patent at Col. 4, lines 58-60.).

We respectfully request that the final rejection of claim 7 be reversed.

***Rejections under U.S.C. 102(e) over the Aucsmith Patent***

Claims 9 and 10

Independent claim 9 recites:

9. *A method comprising:*

*receiving a signal from a first broadcast source at a reference receiver;*

*generating first fingerprint data from the received signal;*

*applying the first fingerprint data to a database to select associated information;*

*receiving second fingerprint data; and*

*comparing the second fingerprint data with the associated information.*

The final rejection of claim 9 should be reversed.

For example, claim 9 recites: *applying first fingerprint data to a database to select associated information*, in combination with other claim features.

The cited passages of the Aucsmith patent (Col. 8, lines 58-65) do not use or apply first fingerprint data to a database to select associated information. Instead, the passages discuss comparing trait values of an unidentified computer system to trait values (or a trait template) from a known computer system. And – in the cited Aucsmith passages – the fingerprint data (traits) is not used to select the trait template or comparison values.

Indeed, these Aucsmith passages do not seem to suggest any database inquiry or interrogation using the first fingerprint data to trigger selection of associated information.

This feature appears to have been overlooked in the final Office Action.

The February 21, 2006 Advisory Action is not helpful in this regard. It cites the Aucsmith patent at Col. 7, lines 60-62 to apparently remedy the deficiencies of the Col. 8 passage. See the Advisory Action, page 2, lines 4-6.

But this passage is not helpful either. While the Col. 7 passage may discuss applying a plurality of prediction functions to a plurality of differences between a plurality of traits in a first fingerprint and a plurality of corresponding traits in a second fingerprint, we do not see any mention of applying a first fingerprint to a database to select associated information.

Claim 9 further recites that second fingerprint data is received, and that the second fingerprint data is compared with the associated information selected from the database.

The Aucsmith patent at Col. 8, lines 58-65 discusses a comparison of first traits directly with second traits (or trait template). A comparator output value is generated and this comparator value is compared to a threshold value.

So the Aucsmith patent at this passage compares: 1) traits to template traits; and 2) comparator values to threshold values.

For argument's sake only, let's say that claim 9's second fingerprint is likened to a trait value, and that the associated information is likened to either comparator values or threshold values. The structure of claim 9 would compare the trait value to the comparator value (or threshold value).

This is in contrast to the cited passage of the Aucsmith patent that would compare: 1) traits to template traits; or 2) comparator values to threshold values.

We respectfully request that the final rejection of claim 9 be reversed.

#### Claim 19

Dependent claim 19 recites:

19. *The method according to claim 9, wherein when a comparison of the second fingerprint data with the associated information does not identify a subset of the associated data, said method further comprises querying a second database to determine additional associated information.*

These features are not even discussed in the final Office Action. See the final Office Action, page 2, last two lines – page 3, lines 1-3.

Moreover, as mentioned above with respect to claim 9, we do not see teachings in the cited Aucsmith passages of applying first fingerprint data to a database to select associated information, let alone querying a *second database* to determine additional associated information.

We respectfully request that the final rejection of claim 19 be reversed.

#### Claim 12

Independent claim 12 recites:

12. *A method comprising:*

*receiving a signal from a first broadcast source at a reference receiver;*

*generating first fingerprint data from the received signal;*

*applying the first fingerprint data to a database to select associated information;*

*receiving second fingerprint data; and*

*comparing the second fingerprint data with the associated information, wherein a user device generates the second fingerprint data.*

The final rejection of claim 12 should be reversed.

The cited passage of the Aucsmith patent (Col. 8, lines 58-65) does not use or apply first fingerprint data to select associated information. Instead, this passage discusses comparing trait values of an unidentified computer system to trait values from a known computer system. And – in the cited Aucsmith passages – the fingerprint data (traits) is not used to select the trait template or comparison values.

There does not seem to be any mention or suggestion of a database inquiry or interrogation using the first fingerprint data to trigger selection of associated information.

Claim 12 further recites that associated information is selected from the database, second fingerprint data is received, and the second fingerprint data is compared with the associated information from the database.

Claim 12 further recites that second fingerprint data is received, and that the second fingerprint data is compared with the associated information selected from the database.

The Aucsmith patent at Col. 8, lines 58-65 discusses a comparison of first traits directly with second traits (or trait templates). A comparator output value is generated and this comparator value is compared to a threshold value.

So the Aucsmith patent at this passage compares: 1) traits to template traits; and 2) comparator values to threshold values.

For argument's sake only, let's say that claim 12's second fingerprint is likened to a trait value, and that the associated information is likened to either comparator values or threshold values. The structure of claim 12 would compare the trait value to the comparator value (or threshold value).

This is in contrast to the cited passage of the Aucsmith patent that would compare: 1) traits to template traits; or 2) comparator values to threshold values.

We respectfully request that the final rejection of claim 12 be reversed.

#### Claims 20 and 21

Claim 20 recites:

20. *A method comprising:*

*receiving a signal from a first broadcast source at a reference receiver, the signal comprising an embedded digital watermark;*

*decoding the digital watermark to obtain a plural-bit identifier;*

*interrogating a database with the identifier to identify a set of fingerprints associated with the received signal;*

*receiving second fingerprint data; and*

*comparing the second fingerprint data with the set of fingerprints.*

The final rejection of claim 20 should be reversed.

Claim 20 envisions a signal including an embedded digital watermark. The digital watermark is decoded to obtain a plural-bit identifier, and the identifier is used to help interrogate a database to identify a set of fingerprints, in combination with other claim features.

The term “digital watermark” implies data hiding and is a form of “steganography”. Steganography is a term derived from the Greek words *steganos* (meaning “covered”) and *graphia* (meaning “writing”).<sup>2</sup> The very existence of a steganographic message is hidden or secret.<sup>3</sup> Digital watermarking essentially hides auxiliary information (e.g., plural-bit data) in a host signal (e.g., audio, video or images).

The present specification incorporates assignee’s U.S. Patent Application No. 09/503,881 (now U.S. Patent No. 6,614,914) by reference. Please see paragraph 34 (page 7) and paragraph 55 (page 13).

The ‘914 patent describes digital watermarking in even further detail:

*Digital watermarking is a process for modifying media content to embed a machine-readable code into the data content. The data may be modified such that the embedded code is imperceptible or nearly imperceptible to the user, yet may be detected through an automated detection process. Most commonly, digital watermarking is applied to media such as images, audio signals, and video signals. However, it may also be applied to other types of data, including documents (e.g., through line, word or character shifting), software, multi-dimensional graphics models, and surface textures of objects.*

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<sup>2</sup> Cf. I. J. Cox, et al. “Digital Watermarking,” Chapter 1, page 3. 2002 by Academic Press.

<sup>3</sup> Cf. id.



*Digital watermarking systems have two primary components: an embedding component that embeds the watermark in the media content, and a reading component that detects and reads the embedded watermark. The embedding component embeds a watermark pattern by altering data samples of the media content. The reading component analyzes content to detect whether a watermark pattern is present. In applications where the watermark encodes information, the reader extracts this information from the detected watermark.*

See U.S. Patent No. 6,614,914, Col. 1, lines 25-45.

While digital watermarking may sometimes employ encryption, e.g., to scramble or lock auxiliary information, digital watermarking is not an encryption process as suggested by the final Office Action. See the Final Office Action at page 5, lines 5-6 of paragraph 6 (“Digital watermarking is basically an encryption process . . .”).

Even the popular on-line Wikipedia distinguishes steganography from cryptography: “the existence of the message itself is not disguised [as with steganography], but the content is obscured [as with cryptography].” (See <http://en.wikipedia.org/wiki/Steganography>.)

We have reviewed the cited passages of the Aucsmith patent (Col. 4, lines 19-20, 57-67 and Col. 5, lines 5-7). While some of these passages (lines 57-67) discuss “encryption” they do not suggest that encrypted information is hidden or concealed in host content.

The Col. 4, lines 19-20 passage discusses traits contained in a computer system’s memory that can be incorporated into a fingerprint. Aucsmith doesn’t say that these are hidden or concealed. For example, the traits might include a user preference (lines 23-25), OS manufacturer, OS version (lines 29-30), time zone, time format (lines 34-35, etc.). But these traits are not hidden or concealed in host data, as they are merely stored in system memory. These passages do not teach or suggest digital watermarking or data hiding.

The cited Col. 5, lines 5-7 passage discusses a verification process through fingerprinting as illustrated in Fig. 4. Here again, these passages do not discuss digital watermarking.

The Aucsmith patent does not teach or suggest each of the features of claim 20, including digital watermarking.

We respectfully request that the final rejection of claim 20 be reversed.

#### Claim 23

Claim 23 recites:

23. *A method comprising:*  
*receiving content, wherein the content comprises an embedded digital*  
*watermark;*  
*decoding the digital watermark to obtain a plural-bit identifier;*  
*deriving a reduced-bit representation of the content;*  
*accessing a database with at least the plural-bit identifier; and*  
*using at least the reduced-bit representation of the content to help identify or*  
*authenticate the content.*

The final rejection of claim 23 should be reversed.

Claim 23 envisions content including an embedded digital watermark. The digital watermark is decoded to obtain a plural-bit identifier. A database is accessed with at least the plural-bit identifier, in combination with other features of the claim.

As discussed above with respect to claim 20, the Aucsmith patent is not understood to teach or suggest digital watermarking, let alone the specific combination discussed in claim 23.

We respectfully request that the final rejection of claim 23 be reversed.

Claim 1

Independent claim 1 recites the following:

1. *A method comprising:*

*aggregating first fingerprint data and second fingerprint data, wherein fingerprint data comprises at least a reduced-bit representation of content, and wherein the first fingerprint data originated at a first source and the second fingerprint data originated at second source, and wherein the first source and the second source are remotely located;*

*identifying information associated with the first fingerprint data and the second fingerprint data; and*

*determining a subset of the associated information.*

The final rejection of claim 1 should be reversed since the Aucsmith patent does not teach or suggest every element of the claim.

Claim 1 recites aggregating first fingerprint data and second fingerprint data. Information associated with the first fingerprint data and the second fingerprint data is identified and a subset of the associated information is determined.

One example falling within the scope of this claim is seen in the specification at paragraphs 40-45. (Of course there are other examples and implementations that will fall within the scope of claim 1 so limitations from the specification should not be read into claim 1.) These specification passages are reproduced below for the convenience of the Board.

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**[0040]** In some situations, content may be processed by plural users, at about the same time, to generate corresponding identifiers. This may occur, for example, where the content is a song or advertisement broadcast over the radio. Many listeners in a metropolitan area may process audio from the same song broadcast over the radio, e.g., to learn the artist or song title, to engage in some related e-commerce activity, or for another purpose (such as the other purposes identified in the cited applications).

**[0041]** In such cases it may be desirable to employ collaboration between such users, e.g., to assure more accurate results, to reduce the processing burden, etc.

**[0042]** In one embodiment, each user generates several different fingerprints from the content (such as those identified in the table, above). These fingerprints may be aggregated with other fingerprints submitted from other users within a given time window (e.g., within the past twenty seconds, or within the past fifteen and next five seconds). Since more data is being considered, the “correct” match may more likely stand out from spurious, incorrect matches.

**[0043]** Consider Users 1 and 2, whose content yields fingerprints giving the following matches (User 1 is unchanged from the earlier example):

Fingerprinted excerpt	Matches these songs in database
User 1, Fingerprint N	A, B, C
User 1, Fingerprint N+1	C, D, E
User 1, Fingerprint N+2	B, D, F
User 1, Fingerprint N+3	B, F, G
User 2, Fingerprint M	A, B, E
User 2, Fingerprint M+1	H, I, A
User 2, Fingerprint M+2	X, Y, Z

**[0044]** Aggregating the fingerprints from the two users results in an enhanced vote tally in which song B is the evident correct choice – with a higher probability of certainty than in the example earlier given involving a single user:

Matches to	A	B	C	D	E	F	G	H	I	X	Y	Z
# Hits	2	4	2	2	2	2	1	1	1	1	1	1

**[0045]** Moreover, note that User 2's results are wholly ambiguous – no song received more than a single candidate match. Only when augmented by consideration of fingerprints from User 1 can a determination for User 2 be made. This collaboration aids the situation where several users are listening to the same content. If two users are listening to different content, it is highly probable that the fingerprints of the two users will be uncorrelated. No benefit arises in this situation, but the collaboration does not work an impairment, either. (In identifying the song for User 1, the system would only check the candidates for whom User 1 voted. Thus, if the above table showed 5 votes for a song J, that large vote count would not be considered in identifying the song for User 1, since none of the fingerprints from User 1 corresponded to that song.)

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In the above example a first fingerprint (e.g., User 1, Fingerprint N) and second fingerprint (e.g., User 2, Fingerprint M) are used to identify associated information (e.g., Songs A, B, C and A, B, E). A subset of the associated information is determined (e.g., Song A or B).

The final Office Action relies on the Aucsmith patent at Col. 7, lines 15-23.

But the Aucsmith patent here generates a first fingerprint and generates a second fingerprint, and compares the two fingerprints to determine a probability as to whether a first computer system is the same as an unidentified computer system (see also Col. 7, lines 15-24).

But we do not see an aggregation (e.g., collaboration) of first and second fingerprints in the manner claimed to achieve a determination of a subset of associated information. For example, claim 1 recites that information associated with the first fingerprint data is identified and information associated with the second fingerprint data is identified. A subset is determined from this associated information. The cited passages of the Aucsmith patent, instead, would directly compare a first fingerprint against a second fingerprint to determine a value representing a probability. See the Aucsmith patent at Col. 7, lines 20-23.

The acts of identifying information associated with the first fingerprint data and the second fingerprint data and determining a subset of the associated information is missing in these cited Aucsmith passages.

The final Office Action also cites the Aucsmith patent at Col. 8, lines 58-65.

The Col. 8 passage directly compares sampled trait values to that of known trait or template values (and then compares resulting computed values to threshold values) to decide whether an unidentified computer system is a known computer system. But this discussion seems unhelpful regarding aggregation (e.g., collaboration) of first and second fingerprints, and identifying information associated with the first and second fingerprints to help determine a subset of the associated information.

We respectfully request that the final rejection claim 1 be allowed.

#### Claims 3 and 4

Dependent claim 3 recites:

*3. The method according to claim 1, wherein said determining is based at least in part on a frequency occurrence of the subset, and wherein the subset comprises at least one of audio, video, and image data.*

The final rejection of claim 3 should be reversed since the Aucsmith patent does not teach or suggest the combination recited therein.

Claim 3 recites that the determining of claim 1 is based at least in part on a frequency occurrence of the subset.

Again we cite an illustration in the specification by way of example. Like mentioned above, other examples and implementation will surely fall within the scope of claim 3. Thus, limitations from the specification should not be read into claim 3.

-----

**[0043]** Consider Users 1 and 2, whose content yields fingerprints giving the following matches (User 1 is unchanged from the earlier example):

Fingerprinted excerpt	Matches these songs in database
User 1, Fingerprint N	A, B, C
User 1, Fingerprint N+1	C, D, E

User 1, Fingerprint N+2	B, D, F
User 1, Fingerprint N+3	B, F, G
User 2, Fingerprint M	A, B, E
User 2, Fingerprint M+1	H, I, A
User 2, Fingerprint M+2	X, Y, Z

**[0044]** Aggregating the fingerprints from the two users results in an enhanced vote tally in which song B is the evident correct choice – with a higher probability of certainty than in the example earlier given involving a single user:

Matches to	A	B	C	D	E	F	G	H	I	X	Y	Z
# Hits	2	4	2	2	2	2	1	1	1	1	1	1

-----

A frequency occurrence may correspond to the number of hits. For example, and with reference to paragraph [0044] above, Song B has a frequency occurrence of 4 while Song A has a frequency occurrence of 2.

A subset (e.g., Song B) of associated information (e.g., Songs A-Z) can be selected based at least in part on the frequency occurrence (e.g., 4 hits).

The Office Action cites Col. 3, lines 52-58 as teaching the features of claim 3. And while we see reference to audio and video content we do not see discussion of a frequency occurrence utilized in a determination of a subset of associated information.

For example, the cited Col. 3 passages discusses that a fingerprint may be necessary for individual data compilations (e.g., audio, video) if only limited usage of such compilations is allowed.

This does not imply a frequency occurrence utilized in a determination.

And we are not convinced that limiting usage of audio or video, as required by the cited Aucsmith passage, would even be useful in practice in the context of claim 3.

We respectfully request that the final rejection of claim 3 be reversed.

#### Claim 6

Dependent claim 6 recites:

*6. The method according to claim 1, wherein the first fingerprint data comprises a first set of audio fingerprints, and wherein the second fingerprint data comprises a second set of audio fingerprints.*

The final rejection of claim 6 should be reversed.

Again reference to the specification is helpful. But, like the claims discussed above, limitations from the specification should not be read into claim 6 as many other examples and implementations will be covered.

-----

**[0043]** Consider Users 1 and 2, whose content yields fingerprints giving the following matches (User 1 is unchanged from the earlier example):

Fingerprinted excerpt	Matches these songs in database
User 1, Fingerprint N	A, B, C
User 1, Fingerprint N+1	C, D, E
User 1, Fingerprint N+2	B, D, F
User 1, Fingerprint N+3	B, F, G
User 2, Fingerprint M	A, B, E
User 2, Fingerprint M+1	H, I, A
User 2, Fingerprint M+2	X, Y, Z

-----



In this example the first set of audio fingerprints may include fingerprints: N, N+1, N+2, and N+3, each from User 1. And the second set of audio fingerprints may include fingerprints: M, M+1, and M+2, each from User 2.

The cited Col. 3, lines 42-44 seems to discuss a single fingerprint based on values from different components (“The fingerprint is based on values available from components (including software) which are actually present in the system.”).

This does not teach a first set of audio fingerprints and a second set of audio fingerprints.

The cite Col. 3, lines 52-57 discusses a host machine fingerprint for individual data compilations (e.g., audio, video or other information) if only limited usage of such compilations is allowed.

Here again this passage does not discuss a first set of audio fingerprints and a second set of audio fingerprints.

The final rejection of claim 6 should be reversed.

### ***Rejections under U.S.C. 103(a) over the Aucsmith Patent***

#### Claim 2

Claim 2 recites:

*2. The method according to claim 1, wherein said determining is based at least in part on a frequency occurrence of the subset, and wherein the frequency occurrence comprises a vote tally.*

The final rejection of claim 2 should be reversed.

The final Office Action fails to even discuss determining based at least in part on a frequency occurrence of a subset. See the final Office Action, page 4, lines 3-5 of paragraph 2.

Frequency occurrence was discussed above with respect to claim 3.

We noted there that while we see reference to audio and video content at the Aucsmith patent's Col. 3, lines 52-58, we do not see discussion of a frequency occurrence utilized in a determination of a subset of associated information.

For example, the Col. 3 passages discusses that a fingerprint may be necessary for individual data compilations (e.g., audio, video) if only limited usage of such compilations is allowed.

This does not imply a frequency occurrence utilized in claim 2's determination.

We respectfully request that the final rejection of claim 2 be reversed.

#### Claim 5

Claim 5 recites:

*5. The method of claim 1, wherein said aggregating comprises aggregating fingerprint data within a predetermined time period.*

The rejection of claim 5 should be reversed.

The cited Aucsmith passages lack any teaching or suggestion of aggregating fingerprint data within a predetermined time period. The final Office Action acknowledges this, but still seeks to modify the Aucsmith teachings. See the final Office Action at page 4, paragraph 2.

We are confused by the final Office Action's motivation statement to justify modification of the Aucsmith patent -- stopping hackers. See page 4, lines 6-10 of paragraph 4.

The present specification explains that a time window or period is helpful in correctly identifying information or fingerprints. See, e.g., paragraph [0042].

The final Office Action stated motivation seems off the mark.

We respectfully request that the final rejection of claim 5 be reversed.

***Rejections under U.S.C. 103(a) over the Aucsmith Patent in view of the Li Patent***

Claims 14 and 15

Independent claim 14 reads as follows:

14. *A method comprising:*  
*receiving a signal from a first broadcast source at a reference receiver;*  
*generating first fingerprint data from the received signal;*  
*applying the first fingerprint data to a database to select associated information;*  
*receiving second fingerprint data, wherein a user device generates the second fingerprint data;*  
*comparing the second fingerprint data with the associated information; and*  
*determining a geographical location of the user device.*

The final rejection of claim 14 should be reversed.

Claim 14 should be allowed for at least reasons analogous to those presented above with respect to claims 9 and 12, above. For brevity we will not repeat those arguments here.

Claim 14 also recites determining a geographical location of a user device. The final Office Action does not even address this feature, nor does it address why the Aucsmith patent should be modified with the Li patent to achieve this combination (see the final Office Action on page 5, paragraph 4).

The final rejection should be removed for at least this reason alone.

We respectfully request that the final rejection of claim 14 be reversed.

Claim 13

Independent claim 13 reads as follows:

13. *A method comprising:*

*receiving a signal from a first broadcast source at a reference receiver;*

*generating first fingerprint data from the received signal;*

*applying the first fingerprint data to a database to select associated information;*

*receiving second fingerprint data, wherein a cell phone generates the second fingerprint data; and*

*comparing the second fingerprint data with the associated information.*

Claim 13 should be allowed for at least reasons analogous to those presented above with respect to claims 9 and 12. For brevity we will not repeat those arguments verbatim here.

For example, we do not see teachings in the cited Aucsmith passages (Col. 8, lines 58-65) of applying first fingerprint data to a database to select associated information.

We respectfully request that claim 13 be allowed.

Thus, we respectfully request that the final rejection of claim 13 be reversed.

**CONCLUSION AND REQUEST FOR REVERSAL**

The applied patents fail to disclose all of the limitations of the pending claims. As such, the claims are believed patentable over the applied art. (Other deficiencies of the applied art need not be belabored at this time.)

Appellants respectfully request that the Board reverse the final rejection of the pending claims.

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Respectfully submitted,

DIGIMARC CORPORATION

By

A handwritten signature in black ink, appearing to read 'St SL' with a long horizontal stroke extending to the right.

Steven W. Stewart

Registration No. 45,133

**CLAIMS APPENDIX**

1. (previously presented): A method comprising:

aggregating first fingerprint data and second fingerprint data, wherein fingerprint data comprises at least a reduced-bit representation of content, and wherein the first fingerprint data originated at a first source and the second fingerprint data originated at second source, and wherein the first source and the second source are remotely located;

identifying information associated with the first fingerprint data and the second fingerprint data; and

determining a subset of the associated information.

2. (previously presented): The method according to claim 1, wherein said determining is based at least in part on a frequency occurrence of the subset, and wherein the frequency occurrence comprises a vote tally.

3. (previously presented): The method according to claim 1, wherein said determining is based at least in part on a frequency occurrence of the subset, and wherein the subset comprises at least one of audio, video, and image data.

4. (original): The method according to claim 3, wherein the associated information comprises at least one of audio, video and image data.

5. (previously presented): The method of claim 1, wherein said aggregating comprises aggregating fingerprint data within a predetermined time period.

6. (original): The method according to claim 1, wherein the first fingerprint data comprises a first set of audio fingerprints, and wherein the second fingerprint data comprises a second set of audio fingerprints.

7. (previously presented): A method to match a song based on an audio fingerprint, said method comprising:

aggregating a first set of audio fingerprints provided by a first device with a second set of audio fingerprints provided by a remotely located second device;

determining a plurality of songs relating to the aggregated fingerprints; and

selecting a song from the plurality of songs based on a number of times a selected song matches the aggregated fingerprints.

8. (original): The method according to claim 7, wherein the selected song includes the highest number of matches.

9. (previously presented): A method comprising:

receiving a signal from a first broadcast source at a reference receiver;

generating first fingerprint data from the received signal;

applying the first fingerprint data to a database to select associated information;

receiving second fingerprint data; and

comparing the second fingerprint data with the associated information.

10. (previously presented): The method according to claim 9, wherein said comparing comprises selecting a subset from the associated information based on a vote tally.

11. (previously presented): A method comprising:

receiving a signal from a first broadcast source at a reference receiver;

generating first fingerprint data from the received signal;

applying the first fingerprint data to a database to select associated information;

receiving second fingerprint data; and

comparing the second fingerprint data with the associated information, wherein said comparing comprises selecting a subset from the associated information based on a vote tally, and wherein the vote tally includes probabilities of a match with the second fingerprint data, and wherein the selected subset has a highest probability of a match.



12. (previously presented): A method comprising:

- receiving a signal from a first broadcast source at a reference receiver;
- generating first fingerprint data from the received signal;
- applying the first fingerprint data to a database to select associated information;
- receiving second fingerprint data; and
- comparing the second fingerprint data with the associated information, wherein a user device generates the second fingerprint data.

13. (previously presented): A method comprising:

- receiving a signal from a first broadcast source at a reference receiver;
- generating first fingerprint data from the received signal;
- applying the first fingerprint data to a database to select associated information;
- receiving second fingerprint data, wherein a cell phone generates the second fingerprint data; and
- comparing the second fingerprint data with the associated information.

14. (previously presented): A method comprising:

- receiving a signal from a first broadcast source at a reference receiver;
- generating first fingerprint data from the received signal;
- applying the first fingerprint data to a database to select associated information;

receiving second fingerprint data, wherein a user device generates the second fingerprint data;  
comparing the second fingerprint data with the associated information; and  
determining a geographical location of the user device.

15. (previously presented): The method according to claim 14, wherein the user device comprises a cell phone, and wherein the geographical location of the user device is determined by at least one of area code, cell site, device identifier, repeater identifier, and alpha-numeric data.

16. (previously presented): A method comprising:  
receiving a signal from a first broadcast source at a reference receiver;  
generating first fingerprint data from the received signal;  
applying the first fingerprint data to a database to select associated information;  
receiving second fingerprint data;  
comparing the second fingerprint data with the associated information;  
receiving a signal from a second broadcast source at the reference receiver;  
generating third fingerprint data from the received signal of the second broadcast source;  
and  
applying the third fingerprint data to the database to select associated information.

17. (original): The method according to claim 16, wherein the reference receiver comprises a plurality of receivers.

18. (original): The method according to claim 17, wherein at least a first receiver of the plurality of receivers and a second receiver of the plurality of receivers are located in different geographical locations.

19. (previously presented): The method according to claim 9, wherein when a comparison of the second fingerprint data with the associated information does not identify a subset of the associated data, said method further comprises querying a second database to determine additional associated information.

20. (previously presented): A method comprising:

- receiving a signal from a first broadcast source at a reference receiver, the signal comprising an embedded digital watermark;
- decoding the digital watermark to obtain a plural-bit identifier;
- interrogating a database with the identifier to identify a set of fingerprints associated with the received signal;
- receiving second fingerprint data; and
- comparing the second fingerprint data with the set of fingerprints.

21. (previously presented): The method according to claim 20, wherein said comparing comprises selecting a subset from the set of fingerprints based on a vote tally.

22. (previously presented): A method comprising:

cumulating a first set of representations of audio or video with a second set of representations of audio or video, wherein the representations comprise reduced-bit representations of audio or video, and wherein the first set of representations are provided from a first device and the second set of representations are provided from a second device;

determining a plurality of audio and video content relating to the cumulated sets; and

selecting a set of audio or video content from the plurality of audio or video content based on a number of times a selected set of audio and video content corresponds with the cumulated sets.

23. (previously presented): A method comprising:

receiving content, wherein the content comprises an embedded digital watermark;

decoding the digital watermark to obtain a plural-bit identifier;

deriving a reduced-bit representation of the content;

accessing a database with at least the plural-bit identifier; and

using at least the reduced-bit representation of the content to help identify or authenticate the content.

**EVIDENCE APPENDIX**  
**(No Evidence)**

**RELATED PROCEEDINGS APPENDIX**  
**(No Related Proceedings)**